Airspace Operations And Safety Program

Air Traffic Management (ATM) Technology Demonstration (ATD-1)

Completed Technology Project (2015 - 2017)

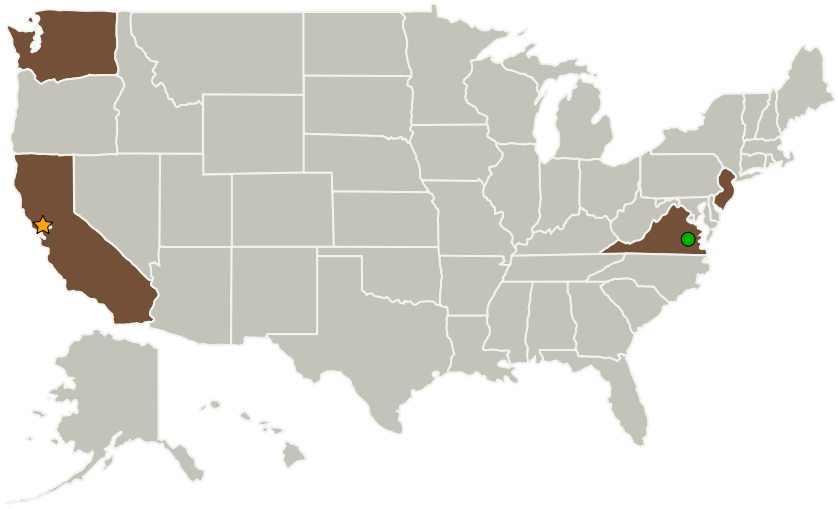
Project Introduction

ATM (Air Traffic Management) Technology Demonstration (ATD)-1 challenge develops and delivers integrated aircraft-based and ground-based automation technologies to the FAA NextGen and Air Traffic Organizations, the FAA Surveillance Based Systems Program Office, and flight operators, to enable improved arrival operations efficiency while increasing arrival throughput.

Anticipated Benefits

• Terminal Sequencing and Spacing (TSAS) tools for terminal controllers will enable considerable improvement in performance-based navigation conformance in congested airspace. TSAS has been transferred to the FAA for implementation. According to FAA analysis, life cycle benefit to airlines exceeds $600M.• Demonstration of Flight Deck Interval Management (FIM) informs RTCA standards committees on equipage and performance or further flight requirements. • FIM performance data provided to FAA Surveillance and Broadcast Services Office will aid their planning for further flight tests.

Primary U.S. Work Locations and Key Partners



Air Traffic Management (ATM) Technology Demonstration

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
American Airlines	Supporting Organization	Industry	
Federal Aviation Administration(FAA)	Supporting Organization	US Government	Washington, District of Columbia
Honeywell International	Supporting Organization	Industry	
●Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia
The Boeing Company(Boeing)	Supporting Organization	Industry	Chicago, Illinois
United Airlines	Supporting Organization	Industry	

Primary U.S. Work Locations	
California	New Jersey
Virginia	Washington

Project Transitions

October 2015: Project Start

Organizational Responsibility

Responsible Mission Directorate:

Aeronautics Research Mission Directorate (ARMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Airspace Operations and Safety Program

Project Management

Program Director:

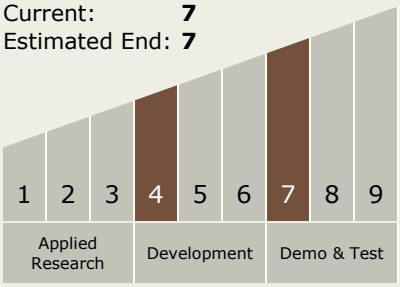
Akbar Sultan

Project Manager:

Shawn A Engelland

Technology Maturity (TRL)

Start: **4**
Current: **7**
Estimated End: **7**



Technology Areas

Primary:

Continued on following page.

Air Traffic Management (ATM) Technology Demonstration (ATD-1)

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September 2017: Closed out

Closeout Summary: The Air Traffic Management Technology Demonstration-1 (ATD-1) subproject closed out in May 2018 after successfully demonstrating two technologies that are expected to improve efficiency and throughput of arrival o perations at busy airports. The first of these technologies is a NASA-developed g round-based automation technology for air traffic controllers called Terminal Seq uencing and Spacing (TSAS) that extends the arrival metering capabilities of the FAA's Time Based Flow Management (TBFM) system into terminal airspace. In M ay 2015, NASA and the FAA partnered to demonstrate TSAS at the FAA's Willia m J. Hughes Technical Center in order to reduce the FAA's risks when implement ing TSAS in the production TBFM system. Later in the ATD-1 lifecycle, an airborn e-based technology called Flight Deck Interval Management (FIM) was tested usi ng a NASA-developed spacing algorithm implemented on an avionics prototype built by the prime contractor, Boeing Research and Technology. FIM demonstrati ons were conducted over central and eastern Washington State during 19 flight test days, and made use of satellite-based navigation. From September 2013 to May 2018, ATD-1 executed eight technology transfers to the FAA, totaling nearl y three gigabytes of technology artifacts ranging from software to technical publ ications and reports.

Project Website:

https://www.aviationsystemsdivision.arc.nasa.gov/research/tactical/atd1.shtm

Technology Areas *(cont.)*

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.3 Traffic Management Concepts

Target Destination

Earth